1986

Coming Home

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Presidential Address

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Abstract. This address argues that human geographers should be eclectic in method and open to a variety of data sources but should frame our research so as to integrate micro- and macro-level observations. To do this, we must focus on the mutual effects of agency and structure. We should under- stand the interactions between people and environment as being neither random nor law-given but rather the combination of historical circumstance of both long and short duration, confining and yet not determining human behavior. This approach has the power to return geography to its intellectual home, an openness to the world in all its complexity. A case study of the response of Californians to earthquake hazards is used to illustrate insights that can be gained by adopting this research strategy.

Key Words: geographic thought, natural hazards, earthquakes, agency, structure, California.

The occasion of a presidential address permits the AAG president to take on the mantle of temporary steward of geography, giving the past president, for a very brief moment, the opportunity to comment on the current status of the discipline and to outline guideposts for possible change. Following the precedents set by other past presidents, I too would like to share with you a few thoughts on what I see as important trends in geographic thought and to put before you a research framework that, I believe, can enhance our work. I shall argue that by adopting this perspective we can bring geography "home" to its core and to its strength.

Major Research Perspectives in Human Geography

Recent research, reported in our annual meetings and in our journals, reflects serious divisions in our field: we are divided in our assumptions concerning both the nature of reality and the ways in which this reality can be addressed. Although it may not be productive to attempt to classify individual research accomplishments into “types,” it is essential that we recognize that whenever we adopt a research framework, we also adopt a set of assumptions that circumscribes not only the questions we pose but also our acceptance that our questions have been answered. At present, the organization of questions and evidence in human geography is summarized by four major research frameworks. Most geographic research is encompassed by the first of these frameworks.

The Search for Order

The most widely held research perspective, that which seems to be favored by federal funding agencies, is based on an assumption that spatial behavior or the relationships between people and their physical environments can be explained by generalizations that, ceteris paribis, hold over space and time. Our disciplinary goals are taken to be the discovery of these generalizations. The basic premise of this perspective, then, is that there are regularities in the world and that it is the duty of any science to try to understand these regularities. These assumptions form the basis for research linking distance, direction, or connectivity with individual or aggregate behavior, or attempts to describe locational or environmental decision making by a set of general principles that are tested through survey research or laboratory experimentation.

Data used in this approach are highly varied. In addition to printed information sources, geographers may use structured or open-ended interviews as well as simulated decision-making settings. Statements concerning preferences or retrospective accounts may be supplemented with data on imputed costs of particular environmental factors or census figures on outcomes (Bunting and Guelke 1979).

The primary modification of this line of work has been the important shift from earlier deterministic statements toward generalizations cast in probabilistic terms. Examples are the derivation of probability statements or matrices describing migration rates or paths and studies of land rents based on generalized utility functions (Clark 1982; Davies and Pickles 1985; Timmermans 1984; Anas and Eum 1984). Several geographers (Wilson 1981; Rogerson 1985) have considered the issue of bifurcation or chaotic dynamics: the possibility that similar prior circumstances may result in drastically different results given only a slight change in the nature of the causal element (Prigogine 1985). The "science of complexity," and its implications for the modeling of spatial behavior have also been considered by geographers (Couclelis 1986). Although the theoretical implications of bifurcation theory, chaotic dynamics, and complexity theory have only begun to be explored, this portion of our field clearly continues to seek generalizations that reflect a law-given world.

A Humanistic Alternative

A second, smaller corps of geographers agrees that generalizations can be made about human behavior based on the study of overall patterns such as those just described. They add, however, that these generalizations may not provide us with answers to the important geographic questions we pose. They claim that such studies fail to give attention to the variety of reasons behind spatial or environmental choices, the peculiar development of locations, or responses to the physical or human-made environment. Even worse, some argue that "scientific geography" may be philosophically less legitimate as a mode of inquiry as subjective knowledge or experience is all that can be known. They argue, then, that it is important to understand the meaning of place or environment to individuals.

The type of study these geographers prescribe varies. At one extreme, phenomenological inquiry might be recommended-research that might involve interpretation by the researcher of, for example, the appreciation of place. This interpretation might be expressed to the reader in more orthodox formats, such as lectures and journal articles, but might also appear as poetry or artwork (Porteous 1984; Meinig 1983; Tuan 1978). A second perspective introduces the methods of participant observation. The geographer, armed with prior expectations concerning possible structural relationships, becomes immersed in a given situation and can observe its operation with the eyes of both a social scientist and a participant (Ley 1974). Some of the ethnographic research done within this frame- work has been criticized for not linking portrayals of community life and values with a larger theoretical perspective and particularly for avoiding reference to the historical or social context (Jackson 1985). However, this failure is not a necessary attribute of ethnography, as has been demonstrated in the successful integration of detailed ethnographic work with a theoretical analysis of class and ethnicity (Cohen 1980; Jackson and Smith 1984; Smith 1984).

The humanistic alternative is therefore in itself complex. Some of the work involves individual interpretations of the meaning of place. Other work investigates the taken-for-granted world as well as an analysis of the individual within the context of ongoing social relation- ships (Duncan 1978). Here, the geographer may attempt to portray the rationalizations given for the behavior of those in this setting with an awareness of the structural realities underlying these rationalizations.

A Structuralist Alternative

Some geographers have charged that even such research may not uncover the unacknowledged causes of social or spatial organization -- particularly if such causes were not previously known to the social scientists and used to generate hypotheses about empirical regularities. For example, explanations embedded in class relationships or in the avoidance of certain people on the basis of religion, gender, or race do not necessarily come to light in large-scale empirical regularities, in the reports of individuals concerning spatial relationships or responses to the environment, or even in detailed ethnographies. It can be argued that because people make decisions within highly constrained circumstances, good geography must study the nature of these constraints.

At the simplest level, one might begin to investigate the role of programs, policies, or individuals who control access to resources: the managers -- whether these be public or private employees -- or those in control of political and economic resources (such as landowners, financiers, large corporations) who make decisions that constrain the options of individuals. Research on these managers or decision makers may involve studies of the locational/environmental strategies of large corporations affecting the distribution of employment opportunities on a local, regional, national, or international scale or of the impacts of property developers on the distribution of residential opportunities in the city. Significant objections to this tack have been taken by those observing that managers are simply carrying out societal processes whose causes lie far outside the realm of individual-level decision making (Leonard 1982; Williams 1982).

Another perspective claims that structural factors may provide the best source of explanation. In this mode of thought at its extreme, spatial patterns or environmental adaptation are derived from macro-structures, and most explanation is claimed to be contained in the larger forces of the political economy (Peet 1979; Blaut 1974; Duncan and Ley 1982). Under this set of assumptions, "good geography" is done when one focuses on those macro-structures or constraints.

Criticism of structural determinism is based on the question of whether or not the higher structures actually have predictive value. In the case of geographers who appeal to characteristics of the political economy, it is important to demonstrate that conceptualizations such as "class" actually have "emergent properties" of macro-structures (or collectives) that can be shown to exist apart from the characteristics of the individuals that comprise the collectives. Harre (1981) has argued that to have explanatory rather than simply rhetorical use, a collectivity such as a social class must have three characteristics: it must (1) be continuous in time, (2) be distinctive and continuous in space (or in a path through space), and (3) have causal powers. On the basis of these criteria, he claims that many widely accepted macro-concepts such as social class are only rhetorical classifications:

> Those person-categorizing relations that we do find actually effective in social life are constitutive of modest collectives of the order of firms, families and the like ... there seem to be no person-constitutive relations which are of greater scale than can be found in institutions of the middle range (Harre 1981, 147).

Thus, according to Harre, although social class is a useful rhetorical construction, it does not have the necessary structural components for existence in other categories and certainly does not provide causal explanation. This is, of course, a contentious argument, and I put it forward to indicate the type of criticism lodged at the ontological nature of the structural determinist perspective in geography.

The Linkage of Micro- and Macro- Structures

Recent work in sociological theory has focused on the related subject of attempting to forge linkages between theory developed at a macro-level and that fitting micro-level observations (Stryker 1985). Aaron Cicourel (1981) has argued that social facts (macro-facts) emerge from the routine practices of everyday life. As these facts become normalized and made context-free, they become macro-structures. It is this process of routinizing micro-level occurrences through individual behavior that micro- events are transformed into organizational and interactive procedures, further structuring individual behavior. It follows from this line of argument that in order to integrate micro- and macro- social phenomena, it is necessary to identify the processes that contribute to the creation and evolution of macro-structures and to show that these processes are actually embedded in routine inferences. These observations are important for the development of geographic theory and can be translated either into studies of the development of spatial organization and its structuring process or into studies of the relationships between human

settlement and environment and the changing relationships and constraints therein.

Following this line of argument, another sociologist, Randall Collins (1981) has suggested that micro-level studies should be used as a basis for grounding macro-level theory. Alone, micro-level studies can be seen as reductionist and idealistic in the sense that they ignore the large contexts within which experiences and transactions take place, whereas macro-level theory can be seen as unexplicated gloss, not relevant to the world as experienced by the individual, or the result of an emphasis on bureaucratic approaches to data collection and analysis. The solution is the weaving together of the two levels of analysis:

> No macro-analysis is a strong argument until it can show not only that a particular historical pattern exists, but why that particular pattern exists rather than another. The requisite cases to compare may not be available on that macro-level, but systematic theory linking micro and macro can provide empirical substitutes as a repository of principles whose plausibility has been more strongly demonstrated in other, smaller contexts (Collins 1981, 94).

Collins also suggests that new substantive hypotheses may be generated from the micro-translation of macro-level concepts. As an example applicable in geography, linkages should be drawn between (1) the individual-level studies of migration and mobility motivations and (2) the large-scale modeling of mobility rates and paths that are supposedly explained by changes in regional economies or movement through the life cycle but which frequently yield “surprising” and unexplained empirical patterns.

Geographers who are proponents of this fourth perspective suggest that explanation need not and indeed cannot be general over places and times. They recommend that geographic research should be focused on answering questions concerning why a particular society has developed a spatial organization or response to environment that it has at a particular time (Johnston 1980b; Massey 1984; Pred 1986). Their research attempts to interweave the impacts of significant and influential individuals or agents with the existing environmental matrix or structure. The goal here is to investigate general processes but not to treat them as deterministic: to recognize that specific historic or geographic circumstances modify the effects of general processes, creating unique outcomes despite the workings of what can be identified as structural circumstances (Massey 1984). It is this perspective within geography that comes closest to trends in European social theory that attempt to take a contingent and holistic approach to explanation. In sociology, this framework is represented by work on "structuring" (Abrams 1982) and “structuration” (Giddens 1984) in which the interaction of the individual agent with the societal structure is the focus of study. In history, the French Annales school and especially the work of Fernand Braudel represents this form of explanation, where the goal is a description of "real life" or holistic understanding of the intersection of daily life and the structure of the larger society, each of which exist in time dimensions of various lengths (Braude; 1980, 1984).

But Shouldn't We Be Eclectic?

In short, there are at least four competing perspectives on geographic research, each with dedicated proponents. Some among us have claimed that it is obvious that "good research" should not limit itself to just one of these perspectives. They argue that research should attempt to combine these perspectives: that there are "many ways" of human geography and that the world is too complex to be understood from any single perspective (Couclelis and Golledge 1983, 337; Casetti 1985).

I do not agree with such a call for an unselective synthesis. Of course, it is true that to do the best work in human geography, we must be versatile in method and open to a wide range of empirical facts. We cannot, should not, and usually do not proscribe the use of particular techniques or sources of information about the way the world functions. We must be open to defining problems in such a way as to admit the use of as much empirical material as possible and to use whatever analytical techniques are appropriate.

What is not possible, however, is the combination of a philosophy that assumes constancy in the social world and deterministic laws with one that assumes an ever-changing reality and admits that people are always changing, learning, and readjusting themselves and their worlds. A deterministic world and a contingent or probabilistic world are not the same; those that assume one cannot in the same breath include the other. Therefore, while we must be open to inquiry conducted at various scales and to the use of whatever methods may be appropriate to answer a wide range of questions, we must also never confuse such necessary and healthy receptivity to information and method with a chaotic and directionless eclecticism in theory (Harris 1980; Johnston 1980a; Kirby 1986; Walker 1979; Sayer 1982).

We shall come to a more complete understanding of place if, while being eclectic in methods, we aim our research at understanding the everyday experience of individuals within the web of circumstance at a particular time and place, integrating micro-level and macro-level observations, theory and conceptualizations. We must recognize the reality of a contingent and probabilistic world, where particular inter- actions between people and environment in place are neither random nor law-given but rather the combination of historical circumstance of both long and short duration, confining and yet not determining human behavior.

I want to note here that what I am arguing is neither new nor radical; instead it harks back to the basic strength of geography as a field that seeks synthesis of human action and environ- mental structure in order to understand the complexity of place. Such a perspective has the power to use the best of our research to illuminate some very complex questions that we seek to answer. In that sense, it can return us to our home-our strength as a discipline.

Whenever we leave home, and then return, neither we nor our homes are quite the same. Similarly this return home is not a simple reversion to tradition nor a denial of the very real

progress our discipline has made over the past 30 years. Instead, it is a return home in the sense that Bruner (1960) suggested when describing a school curriculum that repeats subject matter at ever more complex levels: a movement along an ever-ascending cycle of understanding where each time we re-approach a problem we do so with greater depth and insight. I would argue that the theory I am advocating has the appearance of a return to the basics of our discipline but at the same time includes an enhanced understanding of general principles and constraints.

In the next portion of the paper, I would like to try to illustrate the insights that can be obtained from the perspective of a holistic and contingent approach, one that recognizes the centrality of structure and also pays attention to human agency. I shall apply this perspective to the question of human adjustment to earthquake hazards in California. I am addressing this question from the viewpoint of a human geographer and therefore will focus on how settlement has been affected by earthquake hazards.

The California Earthquake Hazard

The reasons for my curiosity about this problem are twofold: first, such a study is a classic geographic topic about which there has been considerable academic interest; second, the better we understand the process of adjustment and areas of maladjustment, the better we can effect changes that might actually help California residents as well as business and industry in California and other areas linked to its fate. In other words, this type of study has significant policy implications: its results can be used to evaluate current legislation or to set the direction for future legislation.

What is the human adjustment to earthquake hazards in California? To answer this question, I shall divide the discussion into two parts. The first focuses on the current relationship between society and the physical environment. In the second, I present some thoughts on how our understanding of human adjustment to earth- quake hazards is informed by a contingent perspective integrating micro- and macro-level observations.

The Present Situation

As we are well aware, the earthquake hazard in the United States is not limited to California: indeed 70 million people in 39 states are susceptible to loss of life and property from seismic-related events. However, because of the nature of population concentration and the frequency distribution, California has the highest estimated average liability losses, accounting for about two-thirds of the U.S. annualized losses (Federal Emergency Management Agency 1983).

Even within California, risk is far from evenly distributed. It is a function of four factors: (1) the location of the faults and the frequency and intensity of movement along them; (2) the nature of the soil and substructure on which construction has taken place; (3) the nature of land use permitted in particular areas; and (4) the type of construction prevalent in the area and permitted by building codes.

The distribution of risk is at least partly known. Maps of active faults, micro-zonation maps combining knowledge about likely movement on the faults and the distribution of soils and bedrock, and maps of buildings and vital facilities susceptible to damage are widely available. Residents, government agencies, and industry could respond by avoiding particularly susceptible areas, purchasing earthquake insurance, preparing for emergencies, or making structural modifications to existing buildings. These are the measures they could undertake. What do they actually do? The short answer is that the response varies, and the reasons for this variation are only imperfectly understood. Let us consider the response of three sectors: industry and business, residents, and government.

The Response of Industry and Business

Industry and business have responded to the earthquake hazard in several ways including (1) developing emergency plans for the evacuation of employees if an earthquake warning is issued; (2) duplicating and storing computerized records outside the local area to use in the event of a major damaging earthquake; (3) financial contingency planning, and (4) locating head offices to avoid areas susceptible to major damage. How- ever, such commitment is exceptional: large numbers of individual businesses and industries have taken virtually no measures either to protect their employees from death or injury in the event of a major damaging earthquake or to protect their records from being destroyed and their operations from being interrupted.

Three factors seem to affect the decision of businesses and industries to pay attention to the earthquake hazard. First, management must be convinced that a damaging earthquake is likely, that their own operations are susceptible to damage, that normal liability insurance will not be adequate to cover loss claims, and that the benefits of preparing for an earthquake exceed the costs (Prud'homme 1983).

Second, rules of regulatory agencies and tax laws affect response. For example, do regulatory agencies require a particular level of insurance? Is hazard insurance subsidized or a tax-deductible business expense? Do corporate executives believe that government-subsidized loans or grants for recovery will be available, reducing the need for self-insurance?

A third significant factor is the administrative structure of the corporation. For example, if a corporation has designated one of its managers as responsible for emergency planning and if that individual has high career ambitions, then plans are more likely to be developed and some response undertaken. Such individual managers have made a major difference in encouraging the active response of corporations such as IBM or ARCO, in contrast to the virtual nonresponse of other similar California-based corporations. In these instances, it is obvious that corporate response could not have been predicted simply through statements about the "imperatives of capital" or the role of the corporation in the political economy. Instead, the individual or agent has had a major impact on corporate behavior.

This description suggests the need for an explanation that is complex and sensitive to nuances

not obvious from simple structural descriptions or overly generalized principles. It must be informed by explicit attention to the underlying political-economic structure but also must pay attention to the impacts of individuals on this structure. We need data on the vulnerability of a corporation to economic or physical losses in the event of a major damaging earthquake; but we also need to know the perceptions of managers and decision makers, the ways they assess the earthquake hazard in light of other daily pressures, or, alternatively, the ways in which individual managers believe they can use a cause such as earthquake hazards response to advance their careers within the corporation.

The Response of Residents

I have approached this topic by focusing on the housing market. Here again, there is a great deal of variability in response to earthquake hazards, but again an overall absence of effective response.

The real estate industry has incorporated information on surface fault rupture into the sales process, as is mandated by state law, but the disclosure of the location of these zones has had virtually no impact on sales (Palm 1981). Homebuyers themselves vary in awareness of hazards zones, and those most concerned are also more likely to have formed community support groups, stored food and water, purchased earthquake insurance, and generally prepared their families for the emergency period that would follow a major earthquake (Palm 1981, 1983). Such households are exceptional, however: most Californians give attention to other, more pressing matters in their daily lives.

We can only begin to explain this variability in response if we consider the daily lives of Californians in the context of the economic and social structures within which they live. To do so, we must use a wide variety of data sources and also make use of a research perspective that encourages the synthesis of these data.

First, there is evidence that past experience with the hazard has an impact on behavior, although not necessarily in a straightforward way. Indeed, experience with minor tremors may inoculate individuals against accepting the notion that more serious earthquakes will be many times more dangerous to life and destructive to property.

Second, it is important to consider the norms within our culture concerning risk taking and risk sharing. For example, societies may vary in the extent to which members believe they can control or manage the physical environment, resulting in very different responses to environmental hazards. In addition, responses to hazards may vary according to tendencies (1) to act collectively to reduce losses as opposed to leaving the burden of responsibility on the family unit or (2) to accept the authority of a governing body to effect major land use changes impinging on private property in order to reduce susceptibility to hazard.

There are also variations in the time frames people use for planning. Some plan only for the short

run-a few months or a few years- whereas others might more easily plan for a 20 to 50-year time span. During the period of rapid house price inflation in the late 1970s, when homeowners were almost speculating on their own homes-buying them with plans to sell in the very short term for a large profit- planning for the longer term was simply outside the realm of consideration. Since homeowners were planning to keep the properties for only a few years, the 20-year period within which earthquakes were predicted was simply irrelevant. More recently, with greater stability in prices, more attention may be paid to these longer time frames, and environmental hazards may increase in salience.

A third source of variability is the amount of money both at risk and also available to invest in mitigation measures. This factor accounts for some of the difference between intended and actual response, but again it alone does not predict response.

A fourth factor that affects response devolves from the findings of psychologists and economists studying individual calculation of risk. Laboratory research with economic games and psychological testing has revealed fairly systematic sources of error in risk calculation that have been termed heuristics. Examples of these are (1) the "gambler's fallacy"-the belief that if a low-probability event has recently occurred, it is unlikely to occur again soon and therefore can be treated as a zero-probability event and (2) the "minimum probability threshold"-- the treatment of probabilities below some minimum threshold as if they were zero (Slovic, Kunreuther, and White 1974; Kunreuther et al. 1978). Such errors in the calculation of risk also affect response to hazards.

From this cursory listing of some of the many sources of variability in response to hazards, we can see that there are many influences on response and that these influences may work in confounding and mutually incongruent ways. However, two themes stand out. First, we must know as much as possible about the political-economic context within which response takes place, as well as known aspects of cultural regularities or psychological traits that routinely affect decision making within a given set of constraints. Second, we must investigate the role of individuals or agents within this setting. Knowledge about the overall political economy provides a general guideline to predict response, but the influence of individuals within that structure is also significant.

Government Response

The third sector to be considered here is government. Here again, one notes a complex interweaving of political economic structure and individual action affecting response.

In California a series of legislative acts and court decisions have increasingly regulated the range of response to earthquake hazards. The context for this legislation is the shared assumption that earthquake damage is a threat to the general welfare of the population and that legislation should

be developed to protect the general welfare and to support, but not to interfere with, the general interests of capital. Public concern following damage and death associated with major earthquake occurrence can be interpreted in this context and the resulting increasingly restrictive legislation understood. The laissez-faire market context also helps explain the fact that during periods of little seismic activity, when legislation returns to "business as usual" supporting the activities of capital, there is a tendency toward nonenforcement of previous legislation and indifference to new legislation.

Let us briefly review some of the key legislation and court interpretations that have shaped the response to earthquake hazards in California. The first evidence of official state involvement in earthquake hazards was the reprinting of the eighth annual report of the state mineralogist in 1888, which described the Owens Valley earthquake of 1872 (Joint Committee on Seismic Safety 1974).

Following the San Francisco earthquake of 1906, the governor appointed a state earthquake investigation commission which published a two-volume report and atlas of the earthquake. After the Long Beach earthquake of 1933, the state legislature passed the Field Act, which required, among other items, that the State Office of Architecture and Construction set up rules and regulations concerning earthquake safety in the design and construction of school buildings. Other building code provisions (including the Riley Act and the Uniform Building Code) were passed and upgraded by the state, counties, and municipalities.

The Joint Committee on Seismic Safety was established in 1969 to compile information on structural engineering, geological and seismological conditions, land use planning, disaster preparedness, and the organization of government to cope with disaster. A flurry of activity followed the 1971 San Fernando earthquake, including (1) the requirement that all general plans contain a seismic safety element including identification and appraisal of seismic hazards, (2) a bill requiring geological investigation of prospective sites for new schools and additions to existing schools, (3) a requirement that hospital construction standards assure adequate earthquake damage resistance, (4) the preparation of inundation maps by owners of dams, (5) a requirement that the State Mining and Geology Board delineate and map zones encompassing potentially or recently active traces of enumerated faults susceptible to surface faulting or fault creep, and (6) a requirement that real estate agents disclose such zones to prospective property buyers.

Finally, since the Coalinga earthquake of 1984, two laws of interest have been passed. The first requires insurance companies to offer residential property policy holders the opportunity to buy earthquake insurance; the second sets up a prototype earthquake prediction system, including a comprehensive emergency response plan for the Parkfield section of the San Andreas Fault, an area where a magnitude 5.5-6.0 earthquake is predicted to occur within four years of January 1988.

Most of this legislation was developed in response to immediate crises, such as earthquakes resulting in large-scale destruction of property and loss of life. But it was also passed because of the long-term efforts of key individuals. In the case of some of the legislation reviewed here, key actors were state legislators representing districts particularly affected by earthquake hazards or with long-standing interests in seismic safety. Others were scientists who became involved in state public policy formulation. Still others were business executives who had acquired interest in seismic safety either through state-sponsored seminars or through direct previous experience with earth- quakes, e.g., bankers who had lost money after the 1971 San Fernando earthquake through mortgage loan defaulting. Finally, the insurance and real estate lobbies in California have also been involved in modifying legislation. For example, the real estate lobby supported the change of the name of "geologic hazards zones" to "special studies zones."

Although the impacts of each of these pieces of legislation could be analyzed, suffice it to say that the legislation has had a mixed record with respect to the general promotion of public welfare. The Special Studies Zone Act should have had an impact on the developers' decisions to locate large-scale projects of four units or more in the zones, because it mandates a geologic report for each such project. However, developers have reported that although they may have made some small concessions to the required geologic reports in designing the configuration of large-scale housing projects, they have not suffered economic losses because of the legislation. They even report having transferred some public functions, such as pipelines or roads, to the areas along the fault traces where residential development was proscribed by the law, thereby transferring costs from the private to the public sector (Palm 1985).

Similarly, the recent requirement that insurance companies make an explicit offer of earthquake insurance will doubtless benefit of the insurance companies themselves, as a provision in the legislation holds them harmless from further claims of concurrent causation (when two or more causes combine to produce a loss), previously a source of great potential liability to the insurers.

In short, some of the legislation seemed to deal with providing for the general safety and well-being of society by strengthening building code requirements for schools, hospitals, and other public facilities, and mandating seismic safety planning. However, it has generally not interfered with the economic livelihood of those industries benefiting from the development, sale, or insurance of residential property and in some cases has provided legal assurances to these concerns. Some of the legislation has served to circumscribe the human occupance of land susceptible to natural hazards but has usually been effective primarily within those confines that could be anticipated based on an understanding of the interests of capital.

Knowledge of the impact of key individuals or "agents" on legislation and the subsequent structure has even been incorporated into policy. Social scientists, with full understanding of the significance of the involvement of influential individuals in the passage and implementation of legislation, supported the establishment of agencies such as SCEPP (the Southern California Earthquake Preparedness Project) and BAREPP (the Bay Area Regional Earthquake

Preparedness Project). Both are cooperative agencies sponsored by the state but involving active collaboration of local business and industry in planning for earthquake recovery and response as well as establishing plans to mitigate against some of the preventable losses. The existence of such agencies, and particularly the self-conscious involvement of social scientists in their establishment and nourishment, is a prime example of what Giddens has termed "reflexive monitoring of action" (Giddens 1979, 56).

This interpretation has been cast as an interplay of the physical setting, the political-economic context, and the not-entirely-predictable influence of "agents." This framework can also be used to integrate the significance of changes in the economy that encourage greater or lesser attention to the physical environment and changes in the composition of the population with possibly different degrees of experience in coping with earthquake hazards.

To understand the actual response of real people in a real place, we do best to cast our research in a framework that explicitly examines (1) constraints in the physical environment, (2) the historical setting, including the nature of the political economy, (3) decision-making processes and norms embedded in cultural assumptions, (4) psychological factors affecting general decision making within this culture, and (5) the ambitions and influence of individuals acting in the web of historical and geographic circumstances within which they live their lives. The framework I have put before you does just this and therefore not only permits the inclusion of these highly varied factors but also encourages examination of their complex patterns of inter-action. A geography that would ignore any of these elements would be not only poorer but also less powerful in providing answers to the research questions we pose.

And Now a Few Last Words

The initial question I posed was: what is the human adjustment to earthquake hazards? I have argued that the question is best answered if we approach the research problem as a search for an understanding of a relationship between people and environment that is linked to the web of life of individuals and collectivities in a given place. This web is affected by its own history and setting but is also susceptible to influence by individuals within it. We must recognize that individuals and structures, psychological states and political-economic contexts, power settings and individual choices-all have an influence in a complex world. The recognition of this principle is especially important if one wishes to understand not only the observable responses but also the extent to which there is nonresponse of both individuals and institutions or an unintended consequence of decisions that affect susceptibility to hazard. To answer our research question, then, it is important to be versatile and eclectic in our data gathering and analysis, but to be mindful of our time-specific, location-specific context and the mutual lines of influence of this setting and the individuals living within it. This attempt at synthesis has always been the heart of our discipline. It is our source of strength: our "home base," so to speak.

I have come back to my childhood home-to Minneapolis-to give this address. But I have come

back older and with more experience behind me than I had when I left. In the same way, I am making a plea to my fellow geographers to return to our intellectual home, to our openness to the world, and to our willingness to entertain a variety of data and methods at the same time, as we weave these together to explain place.

As geographers we are constantly challenged to show that our work is as significant as that of other social, behavioral, or physical sciences. One of our responses to this challenge must be the demonstration that our work can provide insights into important scientific questions, such as the one that is central to our field: the relationship between societies and the physical environment. We shall meet this challenge if we adopt an approach that links our scientific research to the broadest possible base of under- standing and to the mainstream of social theory and if we use all of the methods and data at our disposal to answer the questions we pose.

It is important that our discipline not only survive but also prosper, despite the current increasingly competitive institutional climate. I am confident that because we are addressing questions of great significance to society and humankind and because we are casting these questions in such a way as to provide significant insights to understanding our place in the world --our very "home" --that we shall prevail.

Acknowledgments

I would like to thank John S. Adams, Bruce R. Ekstrand, Elihu Gerson, David E. Greenland, Ronald J. Johnston, Andrew Kirby, and Robin Ward for their comments on earlier drafts of this paper.

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